CLAIMS

1. A write power determining method of an optical disk drive, said method comprising the steps of:

obtaining the push-pull signal amplitude at at least two measuring positions in a radial direction of an optical disk before writing;

on the basis of the obtained push-pull signal amplitude, determining optimum write power associated with radial positions over the whole writing area of the disk by computation; and

adopting the determined result as optimum write power information associated with the radial positions of the disk.

2. A write power control method of an optical disk drive, said method comprising the steps of:

obtaining disk position information of an optical pickup at the time of writing;

with reference to the obtained disk position information and stored optimum write power information associated with a disk radial position, setting optimum write power at a writing position of an optical disk; and

controlling laser power of the optical pickup so as to become the set optimum write power.

3. A write power control method of an optical disk drive, said method comprising the steps of:

obtaining the push-pull signal amplitude at at least two positions in a radial direction of an optical disk before writing;

on the basis of the obtained push-pull signal amplitude, determining optimum write power associated with radial positions over the whole writing area of the disk by computation;

adopting the determined result as optimum write power information associated with the radial positions of the disk, and then storing the optimum write power information;

obtaining disk position information of an optical pickup at the time of writing;

with reference to the obtained disk position information and the stored optimum write power information associated with the radial position of the disk, setting optimum write power at a writing position of the disk; and

controlling laser power of the optical pickup so as to become the set optimum write power.

4. A write power determining method or write power control method for an optical disk drive according to claim 1, 2, or 3, wherein:

with respect to the optimum write power information associated with the radial position of the disk, if the optimum write power at an arbitrary outer circumferential measuring position relative to an inner circumferential

reference measuring position is defined as PO, PO is calculated and determined by an equation of:

$$PO = [1 + \{(PPI/PPO) - 1\} \times PUP] \times PI$$

or

$$PO = [1 + \{1 - (PPO/PPI)\} \times PUP] \times PI$$

where:

PPI: the push-pull signal amplitude obtained at the inner circumferential reference measuring position or at a position in proximity to the inner circumferential reference measuring position;

PPO: the push-pull signal amplitude obtained at the arbitrary outer circumferential measuring position;

PUP: a ratio coefficient of power up based on a disk radius; and

PI: the optimum write power by test writing at the inner circumferential reference measuring position.

5. A write power determining method or a write power control method for an optical disk drive according to claim 4, wherein:

with respect to the optimum write power information associated with the radial position of the disk, if the optimum write power at an arbitrary outer circumferential non-measuring position is defined as P, P is or has been calculated and determined by an equation of:

$$P = (PI - PO)/(ri - ro) \times r + (PO \times ri - PI \times ro)/(ri - ro)$$

where:

ri: a disk radial position associated with the inner circumferential reference measuring position or a position in proximity to the inner circumferential reference measuring position; and

ro: a disk radial position corresponding to the arbitrary outer circumferential measuring position at which the PPO described in claim 4 is obtained.

6. A write power determining method or write power control method for an optical disk drive according to claim 1, 2, or 3, wherein:

with respect to the optimum write power information associated with the radial position of the disk, if the optimum write power at the arbitrary outer circumferential measuring position relative to the inner circumferential reference measuring position is defined as PO, PO is or has been calculated and determined by an equation of:

$$PO = [1 + \{(PPI/PPO) - 1\} \times PUP] \times Pr$$

or

$$PO = [1 + \{1 - (PPO/PPI)\} \times PUP] \times Pr$$

where:

PPI: the push-pull signal amplitude obtained at the inner circumferential reference measuring position or at a position in proximity to the inner circumferential reference measuring position;

PPO: the push-pull signal amplitude obtained at the

arbitrary outer circumferential measuring position;

PUP: a ratio coefficient of power up based on a disk radius; and

Pr: the optimum power associated with a disk radial distance of r at the arbitrary outer circumferential position at the time when there is no difference in push-pull amplitude between the inner circumferential position and the outer circumferential position.

7. A write power determining method or write power control method for an optical disk drive according to claim 6, wherein:

with respect to the optimum write power information associated with the disk radial position, if the optimum write power at the arbitrary outer circumferential position relative to the inner circumferential reference position is defined as Prb, Prb is or has been calculated and determined by equations of:

$$Prb = PCR \times Pr$$

where:

Pr: the optimum power associated with a disk radial distance of r at the arbitrary outer circumferential position at the time when there is no difference in push-pull amplitude between the inner circumferential position and the outer circumferential position; and

PCR: a power control coefficient associated with a disk radius of r at the arbitrary outer circumferential

non-measuring position of the optical pickup,

$$PCR = \{(PCI - PCO)/(ri - ro)\} \times r + \{(PCO \times ri) - (PCI \times ro)\}/(ri - ro)$$

where:

ri is a disk radial distance at the inner circumferential reference measuring position or at a position in proximity to the inner circumferential reference measuring position;

ro: a disk radial distance at the arbitrary outer circumferential position;

PCI: a power control coefficient at the inner circumferential reference measuring position or a position in proximity to the inner circumferential reference measuring position; and

PCO: a power control coefficient at the arbitrary outer circumferential measuring position,

$$PCI = 1$$

$$PCO = [1 + \{(PPI/PPO) - 1\} \times PUP]$$

or

$$PCO = [1 + \{1 - (PPO/PPI)\} \times PUP]$$